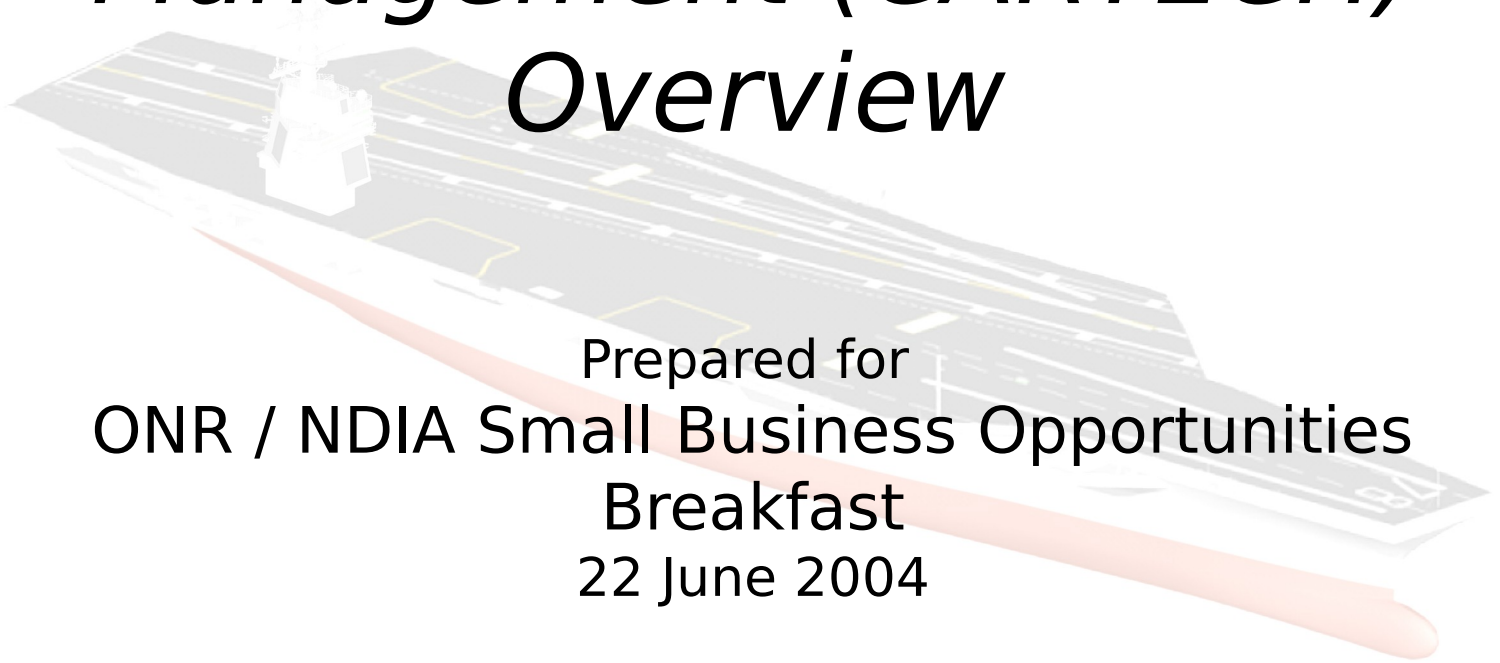
# *Carrier Technology Management (CARTECH) Overview*



Prepared for

ONR / NDIA Small Business Opportunities Breakfast

22 June 2004

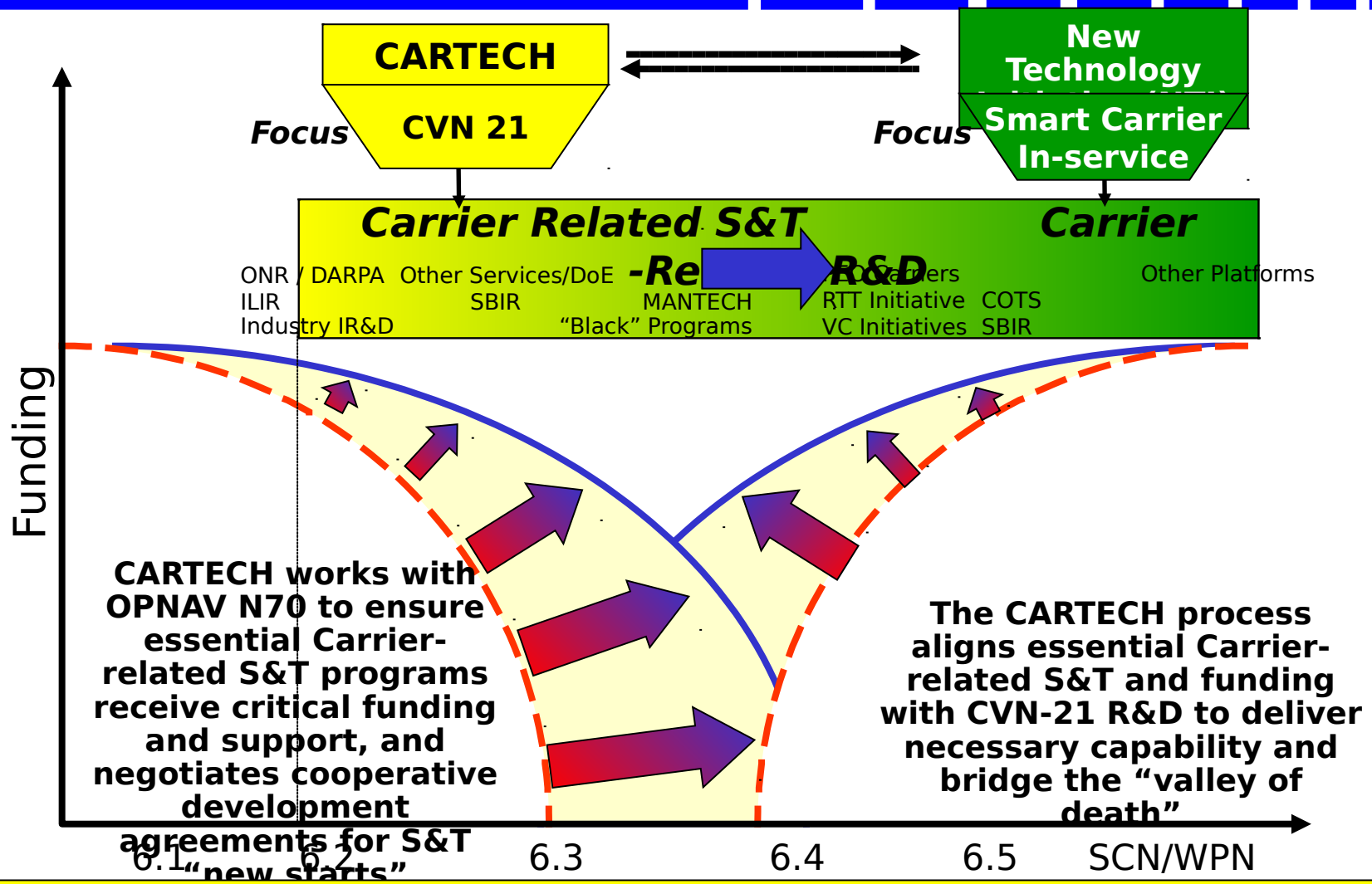
# *Presentation Objective*

- Provide an introduction to Carrier Technology Management (CARTECH)
  - Background
  - Organization
  - Products
  - Carrier Capability Needs
  - Summary

# *Background*

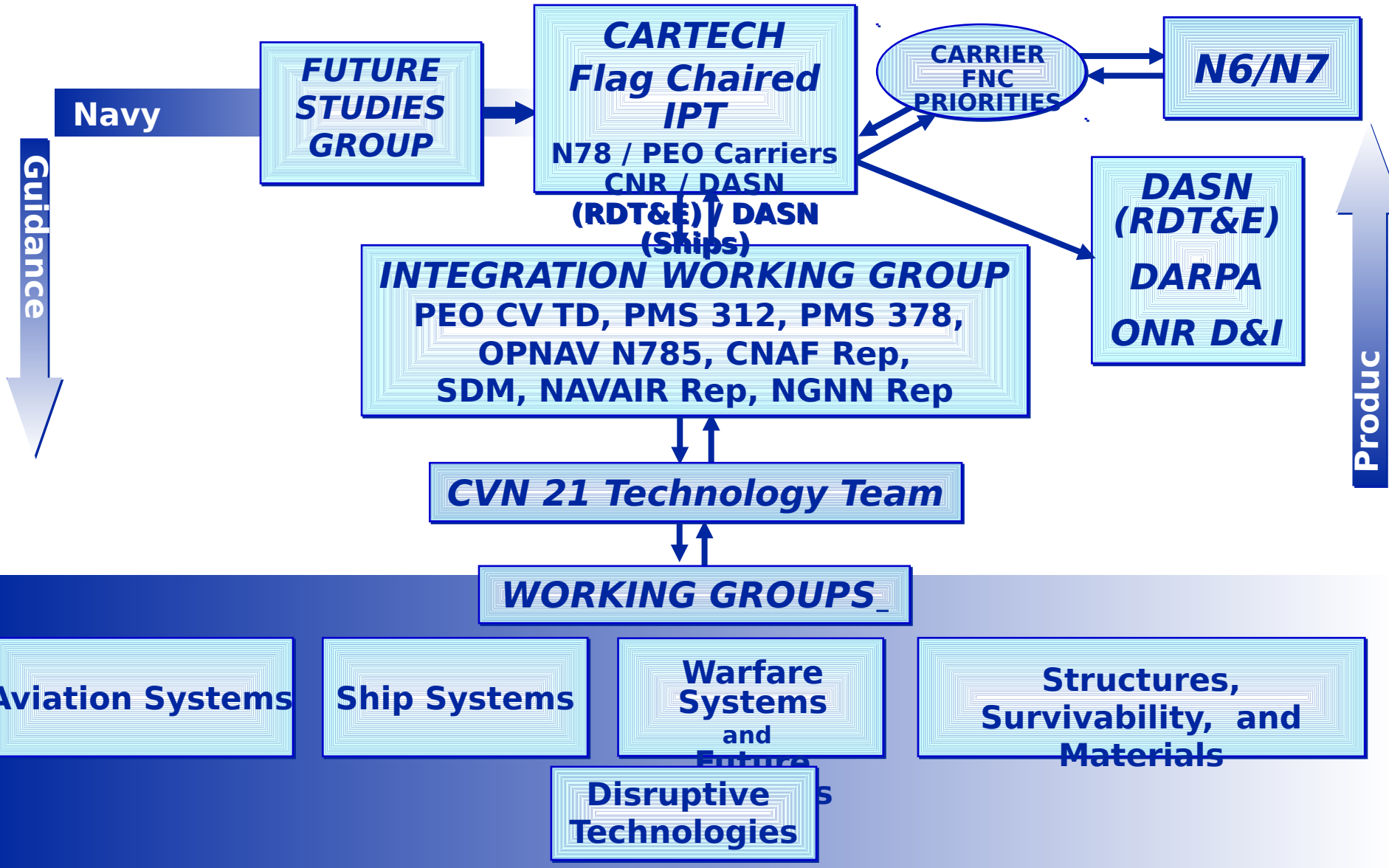
- CARTECH is a management process for carrier technology insertion
  - Provides a structured approach for the evaluation of new technology
  - Is intended to identify and influence S&T funding for future capability

# CARTECH: Technology Transformation




- *The CARTECH objective is to: 1. narrow or eliminate the "Valley of Death" between S&T efforts and program efforts; and 2. Focus the S&T Community efforts toward validated carrier technology needs.*

# CARTECH Organization



# CARTECH Process Overview

**Capability Requirements**

(CVN 21 ORD KPP, MCP/NCP Gaps, and OAG Top Ten)

**Technology Assessments**

- Relevance to CVN 21 Capability Requirements
- Technical Maturity, Cost, and Schedule
- Ship Integration Impact
- Business Plan Feasibility

**Integrated S&T Recommendations**

- Future Naval Capability (FNC) S&T programs
- Non-FNC S&T programs
  - ONR Discovery and Invention (D&I) and DARPA
  - DASN (RDT&E) Rapid Technology Transition
- PEO Carriers S&T needs
- Other S&T initiatives

**ONR**
**DARPA**
**Industry**
**Warfare Centers**

**Technology Sources**

# *CARTECH Products*

- Technology Assessments
- Technology Transition Priority Lists
- Technology Transition and Cooperative Development Agreements
- Technology Roadmaps

*2003 efforts focused on S&T efforts targeted for Hull 1 transition*

*ocus shifting to identifying and protecting S&T for Hull 2 and follow ships*

# Carrier Capability Needs

## Enhanced Weapons / Material Movement

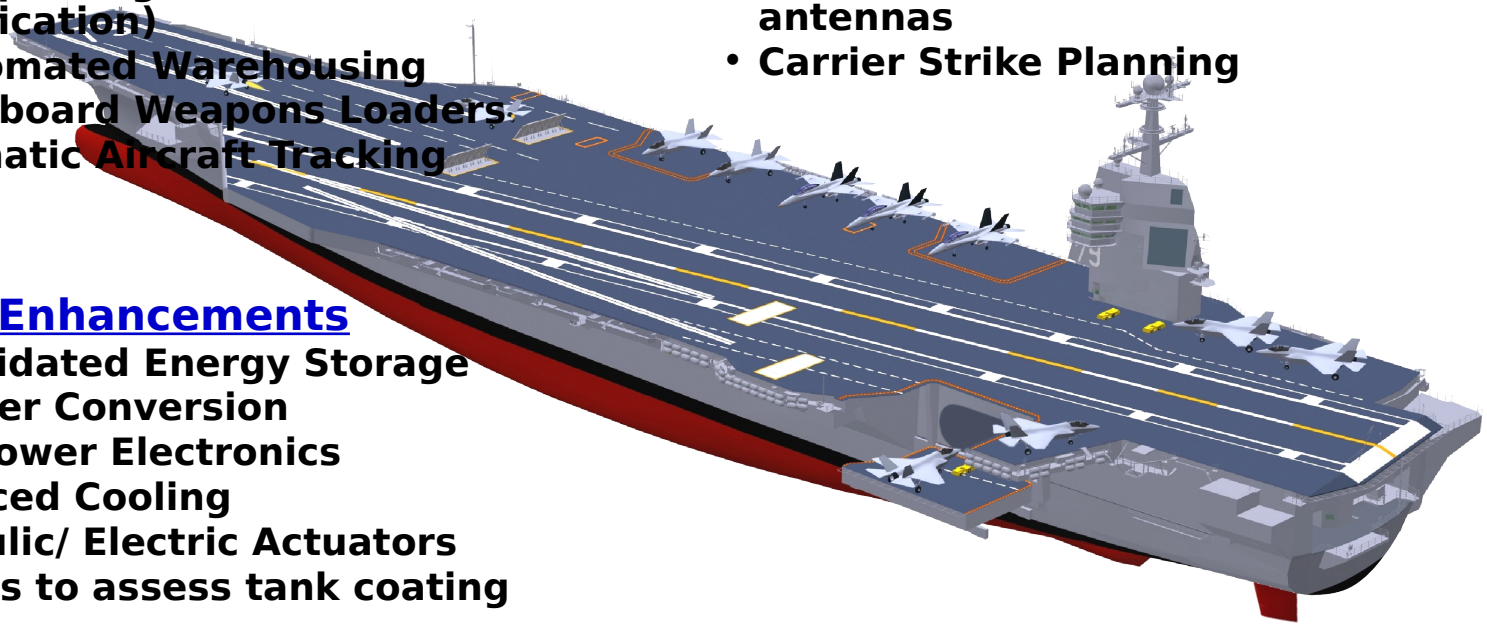
- Automated Weapons and Material Movement:
  - High rate vertical/horizontal movement
  - Compact Agile Mover (human amplification)
  - Automated Warehousing
  - Shipboard Weapons Loaders
- Automatic Aircraft Tracking

## Advanced Materials

- Lightweight Materials (Metal/Composites)
- JBD Materials (Eliminate Saltwater Cooling)
- Coatings

## Warfare Systems

- Reduced number of topside antennas
- Carrier Strike Planning



## Design Enhancements

- Consolidated Energy Storage and Power Conversion
- High Power Electronics
- Advanced Cooling
- Hydraulic/ Electric Actuators
- Sensors to assess tank coating wear
- Airborne Noise
- Ducted Propulsor

## Advanced Ship Self Defense

- Surface Ship Torpedo Defense (SSTD)
- Advanced Point Defense Weapons
- Advanced Force Protection

## Improved Survivability

- Advanced Dynamic Armor
- Advanced Damage Countermeasures

# *Recent CARTECH Successes*
# *Cooperative Agreements Negotiated*

Completed agreements

- DARPA/Navy Passive Jet Blast Deflector (JBD) (Hull 1 / in-service target)
  - Passively cooled Jet Blast Deflector with reduced weight and maintenance within the footprint of legacy JBD (Hull 1 / in-service target)
- Aviation Weapons Inventory Management System (Hull 1 / in-service target)
  - Selected by ASN (RDA) for FY04-FY05 funding
- Portable Fluid Analyzer (PFA) (Hull 1 / in-service target)
  - OSD and ASN (RDA) have agreed to cost share development

Pending agreements

- DARPA/Navy High Power Electronics Effort
  - Hull 1 proof of concept SiC Transformer, with shipwide implementation on Hull 2
  - Investigating integration of Bus Bars and Current/voltage sensor technologies
- Automated Material Movement
  - Hull 1 proof of concept automated dry storeroom and full implementation of automated material movement scheme on Hull 2
- Advanced Damage Countermeasures (Hybrid Mist)
  - TTA between ONR and PEO Carriers for Hull 1 implementation pending design team study

*The CARTECH process has resulted in cooperative agreements that are anticipated to result in an additional ~$28M in FY04 S&T funding for critical carrier needs (~$120M FY05-08)*

# *CARTECH Summary*

- Focusing technology identification efforts on needs that have reasonable expectation of transition funding
  - Consistent with CVN 21, Hull 2, and follow ship design efforts
- Technology Roadmaps are maturing
  - Capture state of carrier-related technology efforts, including critical milestones, and “off ramps”
  - Facilitate continued engagement with N76/N7 processes
- The CARTECH process has been successful in securing additional S&T investment against critical carrier needs
- The CARTECH process is maturing and changing as we gain experience

# CARTECH Points of Contact

| | | | |
|---|---|---|---|
| **CARTECH Management** | Dr. Charles Milligan (PEO Carriers CTO )<br>Paul Everson | Milligancd@navsea.navy.mil<br>Peverson@spa.com | (202) 781-0433<br>(703) 578-6342 |

| CARTECH Working Group | Example Focus Areas | POC | Email | Phone |
|---|---|---|---|---|
| Aviation Systems | Sortie Rate, Flight Deck automation, Weapons Storage / Movement / assembly | Butch Thompson | Bthompson@spa.com | (703) 824-4577 |
| Ship Systems | Material Storage / Movement, Advanced Cooling | Dan Groghan | Groghad@syntek.org | (703) 588-0063 |
| Structures, Survivability, and Materials | Lightweight materials, coatings, damage resistance and control | Alan Dillman | Adillman@spa.com | (703) 824-4504 |
| Warfare Systems | Antennas, Networks, Integrated Warfare Systems | Gary Smith | Gsmith@spa.com | (703) 578-5665 |